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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,903	12/29/2000	Masahiro Murakawa	201425US2X	6872

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EXAMINER

TREMBLAY, MARK STEPHEN

ART UNIT PAPER NUMBER

2827

DATE MAILED: 07/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/749,903

Applicant(s)

MURAKAWA ET AL.

Examiner

Mark Tremblay

Art Unit

2876

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____.

Applicant: Murakawa et al.

Filing date: 12/29/2000

Claim Rejections - 35 USC § 112

5 Claim 10 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The term "positional deviation of light" is vague and indefinite.

Claim Rejections - 35 USC § 102

10 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15 Claims 1, 11, 14 and 16 are rejected under 35 U.S.C. § 102(b) as being anticipated by Patent Abstracts of Japan Publication #08-094,886 to Masayuki ("Masayuki" hereinafter). Masayuki teaches a method for adjusting an optical axis of a light transmission path (see figure 2) that includes a plurality of optical components (optical fiber and semiconductor laser), said method comprising:

20 using an adjustment apparatus (see figure 2) to sequentially change an optical axis of a designated single optical component or multiple optical components among said plurality of optical components in accordance with a probabilistic search technique (approximated to gaussian) to obtain an optimum (peak) evaluation value for light transmitted through said light transmission path.

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Claims 1-2, 4, 6, 8, 9, and 13 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent #5,79,283 to Catanzaro et al. ("Catanzaro" hereinafter). Catanzaro teaches a method for adjusting an optical axis of a light transmission path that includes a plurality of optical components (lenses), said method comprising using an

adjustment apparatus to sequentially change an optical axis of a designated single optical component or multiple optical components among said plurality of optical components in accordance with a probabilistic search technique (genetic, simulated annealing etc; see col. 7, lines 53-57) to obtain an optimum evaluation value for light transmitted through said light transmission path.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 5, 9, 10, 12-13, 15, and 17-19 are rejected under 35 U.S.C. § 103 as being unpatentable over Masayuki. Masayuki teaches the features of the invention, but does not clearly teach the matter recited in these dependent claims. Examiner finds, however, that each of these claims is suggested by Masayuki in an obvious manner.

Re claim 5, the claim recites, "wherein optical axial coordinate values are measured while the optical axis is being changed by said adjustment apparatus, and said coordinate values are stored in a memory, each paired with an evaluation value for light transmitted through the light transmission path at that time, and of pairs of values, a pair comprised of an optical axial coordinate value paired with a largest evaluation value is taken as a local optimum solution." It is suggested from Masayuki that the optical axis is being adjusted, the

outputs at various positions are being measured. Storing such values in memory is old and well known. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to store the outputs in memory, and pair the measurements with the positions and angles for which they apply, because, since the invention is searching for an optimum value, it can't find it unless it remembers previous values in order to compare the previous values with the current values to determine the highest.

Re claim 9, light intensity is not directly mentioned, but focus is. As better focus will increase or decrease the measured intensity of output, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to measure the intensity of the output as an indication of the degree of focus of the laser on the optical fiber, because intensity varies according to the focus. Lack of focus produces a low intensity, and better focus produces a higher intensity.

Re claim 10, to the extent the claim is understood, it would have been obvious to use the positional deviation of light in determining the optical focus, because focus is directly determined by positional deviation.

Re claim 12, duplication of parts is generally considered obvious. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to apply the technique of the alignment of one optical fiber to an array of optical fibers because an array of optical fibers can accomplish more optical fiber tasks than a single optical fiber.

Re claims 13, 15, and 17, the claims recite notoriously old and well known elements in the fiber optics arts. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use a lens, mirror, and receiving element, because a lens helps to focus a laser beam, a mirror helps to fold the optical path of a laser beam to make it more compact, and a receiving element measures the output of a laser, all of which would be understood by persons having ordinary skill in the art.

Re claim 18, see argument with respect to claim 5 above.

Re claim 19, it is pretty clear that Masayuki is not contemplating adjustments by hand. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use a known computer to effect the algorithm described by Masayuki, because while the

method could be performed by hand, the calculations, measurements, and adjustments would be excessively tedious, and a computer would save such manual labor.

Claims 3 and 5 are rejected under 35 U.S.C. § 103 as being unpatentable Catanzaro.

5 Catanzaro teaches the features of the invention as described above, but does not expressly teach the use of the particularly recited search algorithms for alignment of optical devices. Official Notice is taken that hill-climbing search algorithms are old and well known in the art. See In Re Malcolm 1942 C.D.589:543 O.G. 440. See also Applicant's information disclosure documents. It would have been obvious at the time the invention was made to a person having ordinary skill in
10 the art to use a hill-climbing algorithm because a hill climbing algorithm is similar to the recited genetic and simulated annealing probabilistic search algorithms, and Catanzaro suggests the use of similar algorithms in the phrase "and the like" at col. 7, line 56.


The prior art made of record and not relied upon is considered pertinent to applicant's
15 disclosure.

U. S. Patent #6,441,895 is cited for showing another search technique for aligning optical elements.

U. S. Patent #5,859,947 is cited for showing another device for aligning optical elements to find local minima and maxima.

Voice

Inquiries for the Examiner should be directed to Mark Tremblay at (703) 305-5176. The Examiner's regular office hours are 10:30 am to 7:00 pm EST Monday to Friday. Voice mail is available. If Applicant has trouble contacting the Examiner, the Supervisory Patent Examiner,
25 Michael Lee, can be reached on (703) 305-3503. Technical questions and comments concerning PTO procedures may be directed to the Patent Assistance Center hotline at 1-800-786-9199 or (703) 308-4357.


MARK TREMBLAY
PRIMARY EXAMINER

June 29, 2003